

Application No.: 10/074,151
Docket No.: JCLA5041-CA2

IN THE CLAIMS:

Claim 1 (Currently Amended) A method for treating a silicon substrate, comprising:
placing the silicon substrate into a sputtering chamber;
performing a sputtering step to simultaneously dry clean and amorphize the silicon substrate surface by first using the sputtering chamber; and
in situ depositing a titanium film on the amorphized silicon substrate by second using the same sputtering chamber, wherein the sputtering chamber is an ionized metal plasma (IMP) equipment unit.

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Claim 2 (Original): The method of claim 1, wherein the titanium film is deposited at about 540°C.

Claim 3 (Previously Cancelled).

Claim 4 (Previously amended) A method for treating a silicon substrate having a surface, comprising:

providing a pre-processing chamber, wherein the pre-processing chamber has first and second power supplies for sputtering argon therein, wherein the first power supply can provide the argon with a first bias, and the second power supply can provide the silicon substrate with a second bias;

placing the silicon substrate into the pre-processing chamber;
providing the first bias to the argon;
providing the second bias to the silicon substrate;
modifying the first bias and the second bias to sputter the argon to simultaneously dry clean and amorphize the substrate surface;

forming a metal film on the amorphized substrate surface;
performing an annealing step, so that the metal film is reacted with the substrate surface to form a metal silicide layer; and
removing the metal film which is not reacted with the substrate surface.

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Claim 5 (Previously amended) The method of claim 4, wherein the first bias is substantially higher than the second bias.

Claim 6 (Previously amended) The method of claim 4, wherein dry cleaning and amorphizing the substrate surface and forming the metal film are performed in different chambers.

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Claim 7 (Previous amended) The method of claim 4, wherein dry cleaning and amorphizing the substrate surface and forming the metal film are performed within the same chamber.

Claim 8 (Previously Cancelled).

Claim 9 (Previously amended) The method of claim 4, wherein the metal film is deposited in the pre-processing chamber.

Claim 10 (Currently Cancelled).

Claim 11 (Previously amended) The method of claim 4, wherein the metal film is made of cobalt (Co).

Claim 12 (Previously amended) The method of claim 4, wherein the metal film is deposited by TiCl_4 -based CVD.

Claim 13 (previously added) The method of claim 4, wherein the metal film is formed on the amorphized substrate surface at a temperature of about 540°C .